

SMARA UPDATE

The Quarterly Newsletter of the Department of Conservation, Office of Mine Reclamation

Meet the SMGB's New Executive Officer, Stephen M. Testa



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In 1999, **Stephen M. Testa** received a referral to the County of El Dorado regarding some mining-related matters. Testa had been living in the foothills of Calaveras County, filling his time with his consulting practice, writing, and contributing to professional organizations. He served as a consultant to El Dorado County, addressing various issues related to two quarries in the County. Not long after that, the State Mining and Geology Board (SMGB) assumed lead agency authority from El Dorado County for administration of the Surface Mining and Reclamation Act of 1975 (SMARA). By late 2000, Testa was selected, via open bid process, to serve as the SMGB's mine inspector for those sites where the SMGB serves as a lead agency under SMARA, a role he has maintained to the present.

With the appointment of Dr. John Parrish as State Geologist and Assistant Director of the California Geological Survey, Testa pondered whether to leave the private sector, which had provided an exciting, challenging, and professionally rewarding career for over 25 years, and throw his name in the hat for consideration as Executive Officer of the SMGB. It did not take long to decide, since Testa had desired to move into public service for several years, and after observing the functions of the SMGB and its Executive Officer while serving as mine inspector, he knew that the position would present a diverse array of geo-issues.

Testa was born in Fitchburg, Mass. in 1951. His family moved to Burbank in 1963. He attended John Burroughs High School before attending

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what was then called San Fernando Valley Junior College, where he took his first geology class under Dr. James Slosson, former State Geologist of California.

Testa earned his B.S. and M.S. degrees in geology at the California State University at Northridge, with an emphasis in geochemistry and igneous petrology. Upon completing his master's thesis, titled "Tholeiitic Basalts from Spitzbergen and Liberia, West Africa," he pursued international collaboration. Ten years later, in 1988, he co-published a paper in the prestigious peer review journal *Earth and Planetary Science* entitled "Asthenospheric and Lithospheric Sources for Mesozoic Dolerites from Liberia (Africa): Trace Element and Isotopic Evidence."

While completing his master's degree, he worked as an engineering geologist for Frankian and Associates. Upon graduation in the summer of 1978, he performed geologic studies in the Northern Cascades mountain range in Washington, throughout the states of Georgia, Arizona, and California, and in Spain for the international firm Bechtel. Most of this work was associated with the suitability of such areas for the construction of nuclear power plants. He would later work for several consulting firms as an engineering geologist on hydroelectric power plants in southeast Alaska, fault studies in California, and the underground metro rail system for the City of Los Angeles. By 1985, Testa became involved in geologic studies and investigations with an environmental focus. He took part in the early phases of the Superfund program in the Pacific Northwest and was on the leading edge in aquifer restoration technologies. Testa's clients have included many petrochemical and mining companies, law firms, municipalities, irrigation districts, and waste management companies throughout the country.

By 1990, Testa was President and Chief Executive Officer of an international geotechnical and environmental consulting firm which he took public in 1993. The company became internationally recognized, providing strong and innovative expertise in geohazards mitigation, and soil and



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groundwater restoration. Internationally, Testa successfully pursued and became involved in mud flow mitigation efforts associated with the Mt. Pinatubo eruption, regional subsidence issues related to groundwater withdrawal and mining, mitigation of metals-contaminated soil and tailings in Eastern Europe, and groundwater resource development in Yemen. During this period he wrote three leading-edge books focusing on the application of geological principles to environmentally stressed land: *Restoration of Contaminated Aquifers: Petroleum Hydrocarbons and Organic Compounds*; *Geological Aspects of Hazardous Waste Management*; and *The Reuse and Recycling of Contaminated Soils*.

Testa is the author of 11 books and more than 125 publications. He has served as an instructor at the University of Southern California (USC) and the California State University at Northridge, teaching such classes as physical geology, mineralogy, and crystallography. He has also taught hazardous waste management at the California State University at San Francisco, and environmental petroleum engineering at USC. In addition, he has co-authored a book for those entering the geological consulting profession entitled *Principles of Technical Consulting and Project Management*, and received the Roy Shlemon Geology Mentor Honorarium for excellence in application of applied Earth science.

Testa is past Editor-in-Chief of the American Association of Petroleum Geologists - Division of Environmental Geosciences' (AAPG-DEG) peer review journal *Environmental Geosciences*. He has received the American Institute of Professional Geologists' (AIPG) Martin Van Couvering Award and the AAPG-DEG's Research Award. He is a Fellow of the Society of Economic Geologists. Most recently, he was commissioned a Kentucky Colonel by Governor Fletcher of Kentucky.

Testa is the current president of the American Geological Institute (AGI) and past president of the AIPG. Founded in 1848, AGI is a federation of 44 member societies representing more than 120,000 geoscientists. AGI works for the common good of its member societies. As president, an honor that he shares with former California State Geologists Dr. Ian Campbell (1961) and Dr. Jim Davis (1987), Testa has had the opportunity to work closely with geologists at the federal and state level, with academia and industry, and with our representatives in Washington, D.C. and various legislative subcommittees. Testa was appointed Executive Officer of the California State Mining and Geology Board in August 2005.

Because of the time it would take to contract with another mine inspector to handle the duties at the 48 sites where the SMGB has assumed lead agency authority, Testa will continue to perform inspections for the duration of 2005 while serving as Executive Officer. After performing about 140 mine inspections for the SMGB, Testa is looking forward to being involved in the multi-dimensional facets of serving as Executive Officer of the SMGB—a role where geology, policy, industry, and the public good all come together. The SMGB has a rich heritage dating back to 1885. The position of Executive Officer was established on July 1, 1976, immediately following the enactment of SMARA. Testa serves as the fifth Executive Officer of the SMGB.

Volumetric Modeling of Mined Materials Using GPS and GIS

Knowing the volumes of materials present at a mine site is crucial to many aspects of the mining process, from stockpiling enough topsoil for reclamation to keeping a waste dump to a desired size. The most accurate method of calculating the volume of a pile of material is a professional survey of the pile and surrounding area. This can be expensive and time consuming. Volume formulas can be used along with some basic measurements, but these only work for piles with very simple shapes. If the pile is being built from a known starting volume, then the number of truckloads dumped can be counted, but the volume of each load is approximate and can vary greatly over time. If done properly, a Global Positioning System (GPS) survey of a pile, combined with three-dimensional Geographic Information System (GIS) analysis, can give an accurate estimate of volume while avoiding many of the drawbacks of traditional methods.



Actual dredger tailings pile to be modeled.

The data collection for this type of survey involves a person simply walking around on the surface to be mapped while carrying a survey-grade GPS unit. This person should be an experienced GPS user since the accuracy of the data is directly related to the equipment settings and survey conditions. A GPS almanac file should be consulted, and the data collection should be planned for a time when the maximum number of satellites will be available at the survey location. The GPS antenna should be mounted on a pole and placed in a backpack to keep it at a constant height as the GPS user walks around on the pile collecting data points.

There are several types of models that can be made from point data with elevations, and the shape and complexity of the pile will determine which model should be used. This should be determined early because it will affect how and where the data collection will take place. Most piles have slopes with constant angles and have generally planar surfaces for the top and bottom; for these piles, a Triangulated Irregular Network (TIN) model usually works best. A TIN connects data points using straight lines, so data only needs to be collected along the breaks in slope where planar surfaces meet each other. No data is required on “smooth” parts of the pile, so there is no need to walk on steep or unstable slopes. Typically the perimeter of both the base and the top of the pile should be walked, as well as the inside and outside edges of any roads on the pile and any “valleys” and “ridgelines” that have formed in the material. Piles with more complex or irregular shapes will require different data collection techniques and possibly a different type of model altogether.

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Once the field data has been collected, it will be transferred to a computer where positional errors can be reduced by a process known as “differential correction.” The corrected data will be brought into a GIS program and displayed as one point for every position the GPS recorded. The resulting map looks like a “snail trail” or dotted line showing everywhere the GPS user walked (**Figure 1**). Each point shown has an associated elevation stored in a table, and a specialized GIS can use these elevations to create a three-dimensional model of the pile (**Figure 2**). The points defining the perimeter of the base can be separated out and a second TIN representing the lower surface can be made from them to represent the original grade on which the pile was built. The volume of the pile is then calculated by comparing these two surfaces. Future changes to the pile can be modeled and compared to previous models to get the total volume (if compared to the base) or to get the net change in pile volume (if compared to the pile surface). This method can also be used to calculate the volume of material removed from a mined area, although data collection can be much more difficult when operating below grade and at the base of highwalls.



Figure 1: Plan view of individual positions collected one per second as a GPS user walked along edges and slope breaks of the dredger tailings pile. Dense clusters of points indicate a complex surface where more data collection was required.

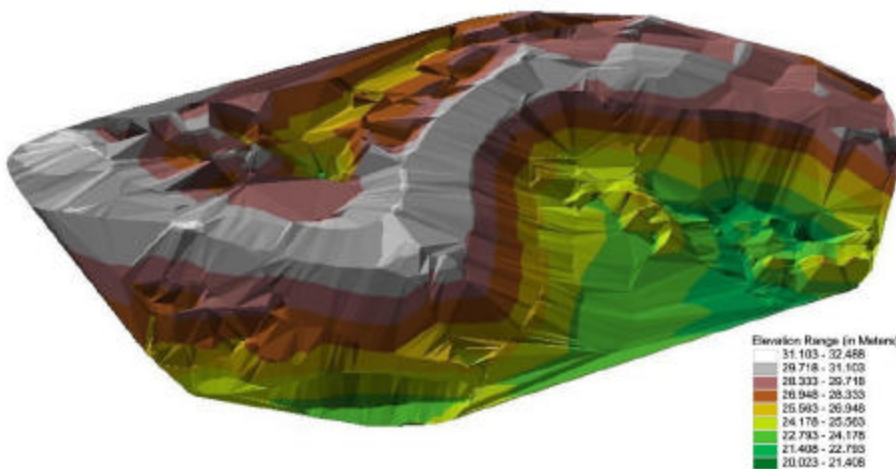


Figure 2: A TIN model of the dredger tailings pile. Note how the smooth slopes with sharp breaks are accurately represented without the need for any data collection on the slopes themselves.

After completing this process a few times, the user will become more proficient and will be able to streamline and simplify aspects of it based on conditions at the individual mine site. Three-dimensional models of mine sites will become easier to create and manipulate, allowing them to play a bigger role in the development, maintenance, and reclamation of modern mines.

*Jonathan Mistchenko
Environmental Scientist*

New Faces at OMR

There have been many changes and new faces in the Office of Mine Reclamation in just the last two months, and there are more to come. With the signing of the 2005/06 Budget Act, OMR gained five additional, much-needed positions to help it meet its statutory responsibilities under the Surface Mining and Reclamation Act of 1975 (SMARA) and to perform abandoned mine remediation activities.

The arrival of three new staff in the Reporting and Compliance Unit (RCU), all engineering geologists, is especially welcome. The annual reporting processing period is winding down, and the RCU now can concentrate on the review of financial assurance cost estimates and inspection reports.



Kim Schwab began her career as a ski bum in the mountains of Colorado before attending Metropolitan State College in Denver, where she acquired a B.S. in geology. After five years of drilling oil/gas wells offshore in the Gulf of Mexico, she moved to California, her home state, to pursue environmental work. Kim has worked for the California Integrated Waste Management Board and, more recently, the Central Valley Regional Water Quality Control Board in Sacramento. Her work at the Board included the regulation of mining and other industrial activities. As a new engineering geologist in the RCU, she can pursue her interest in ensuring that mining operations are reclaimed in a timely and cost-effective manner. Kim is a registered geologist versed in hydrogeology, cleanup of contaminants in groundwater and surface water, and closure/postclosure maintenance of mines.

Cheryl Closson has a bachelor's degree in Earth science from the University of California at Berkeley, and she is a California licensed professional geologist. Cheryl has more than 17 years of experience with the State of California in energy resource assessment and environmental regulation. Most recently, Cheryl worked for the California Department of Toxic Substances Control. In joining the RCU, Cheryl looks forward to continuing to help protect California's environment and rich natural resources by promoting and enforcing responsible surface mining. She also looks forward to working cooperatively with lead agencies and mine operators to achieve the goals of SMARA.



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John Wesling is very pleased to join OMR after an 18-year consulting practice in California. His specialties include engineering geology, pedology, and paleoseismology. He has a B.S. in geology from Indiana University, and an M.S. in geology from the University of New Mexico. John is a state professional geologist and a certified engineering geologist.

John has practiced engineering geology in many parts of California as well as in other states and overseas. His work as a consultant has focused on the identification and characterization of geologic hazards (e.g., landslides, hillslope processes, fault-rupture, vibratory ground motion, and liquefaction), and the characterization of rock and soil conditions for the design and construction of bridges, buildings, pipelines, roads, and other engineered structures. John looks forward to contributing his engineering geology skills to the RCU team.

OMR's Reclamation Unit has a new arrival as well: **Leah Gardner Miller**, a botanist/restoration ecologist and reclamation specialist. Leah graduated from UC Davis with a bachelor's degree in restoration ecology and a master's in biogeography. She was also a teaching assistant in the UC Davis plant biology and wildlife conservation departments. In addition, Leah worked for a private restoration company and native plant nursery in the Sacramento Delta for several years prior to state service. Leah is happy to join us in OMR, where she can apply her extensive knowledge to mine reclamation issues.



Border Zone Property

As more people move into the foothills and desert regions of the state, the likelihood that they will come into contact with abandoned mine sites increases. In addition to physical safety hazards, many abandoned mine sites have soil or water contamination from heavy metals and other chemicals used in the mining process. The potential for increased human contact with these contaminated sites was addressed in the Hazardous Waste Property/Border Zone Property Statute.

The Border Zone Property (BZP) Statute was enacted in 1980. The statute is contained in the California Health and Safety Code, Chapter 6.5, Article 11, Section 25221. The intent of this statute is to prevent new, incompatible land uses within 2,000 feet of a site contaminated with hazardous waste and where there is a potential for human exposure to hazardous substances that could cause significant health risks. Specifically, it applies to residences, hospitals, K-12 schools, day care centers for children, and any permanently occupied human habitation (jails, parsonages, residential guard facilities, etc.). If a property is suspected of being within 2,000 feet of a hazardous waste property, then the land owner, lessor, lessee, or city and county officials can request that a determination be made by the Department of Toxic Substances Control (DTSC). A determination is a decision by the DTSC that, after analysis and evaluation of the site, the property should be designated a hazardous waste property or border zone property. If such a designation is made, land use restrictions may be implemented.

For more information on border zone property, contact the Department of Toxic Substances Control or visit the Department of Conservation's website at: http://www.consrv.ca.gov/OMR/abandoned_mine_lands/amlu_forum.htm

The New State Oak Woodlands Conservation Law

As of January 1, 2005, the State's first oak woodlands conservation and mitigation standards, Public Resources Code (PRC) section 21083.4, went into effect for all California Environmental Quality Act (CEQA) processes within a county's jurisdiction. These new standards were established by Chapter 732, Statutes of 2004 (Senate Bill 1334, Kuehl et al.). Previously, oak woodland land use practices were governed by individual county ordinances that varied widely across the state. This new law greatly strengthens the broad legal defense of oak woodlands. Oak woodland is defined as a habitat with more than 10 percent of the canopy cover comprised of native oak trees in the genus *Quercus* with a diameter at breast height (DBH) greater than 5 inches. Oaks below the 5-inch DBH size will remain under county ordinances or general plans.

Under the PRC, a Registered Professional Forester (RPF) must perform all CEQA oak woodland characterizations and participate in developing site-specific mitigation measures. Licensed by the California State Board of Forestry and Fire Protection, an RPF is required to describe site conditions and impacts for mitigated negative declarations and environmental impact reports. The number of acres of oak woodland habitat, the number of trees that will be removed, the diameters of individual trees, and any special habitat elements that will be impacted determine thresholds of significance. Impacts also include the project's cumulative contribution to the overall loss of oak woodlands. RPFs will supplement the work of biologists, ecologists, and others involved in the CEQA compliance process. Due to the high biological diversity supported by oak habitats, it is likely that endangered, threatened, or sensitive species may occur on site. In this case, the Department of Fish and Game and/or the U.S. Fish and Wildlife Service also will need to be involved.



A quarry amid oak woodlands in El Dorado County

According to these new CEQA standards, there are four alternatives available to mitigate significant impacts to oak woodlands. Counties must require one or more of the measures for a project. Planting of oaks (alternative 2) can be used to fulfill no more than 50 percent of the required mitigation, so it must always be combined with at least one of the other alternatives. The four alternatives are:

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- 1) Conserve oak woodlands through the use of conservation easements (preferably in close proximity to the project site).
- 2) Plant an appropriate number of trees, including maintaining plantings for seven years and replacing dead or diseased trees.
- 3) Contribute funds to the Oak Woodlands Conservation Fund as established under subdivision (a) of Section 1363 of the Fish and Game Code for the purchase of oak woodlands conservation easements.
- 4) Other mitigation measures developed by the county.

Oak woodlands are a characteristic feature of our California landscape, covering 7.4 million acres and occurring in 52 of the State's 58 counties. Eighty percent of these lands are held under private ownership. Oak woodlands have the richest wildlife species abundance of any habitat in California, with over 330 species of birds, mammals, reptiles, and amphibians depending on them at some stage in their life cycles. They are also valuable for providing important ecosystem services and aesthetic values. However, more than 30,000 acres of oak woodlands are lost every year in California, converted for agricultural, residential, and commercial uses. CEQA compliance for impacts to oak woodlands under the new law may help to reduce this rate of loss and fragmentation.

One of the many land uses that can occur within these special habitats is surface mining, governed by CEQA, SMARA, and State regulations. Oak mitigation measures developed to satisfy the new CEQA requirements will have to be included in all mine reclamation plans submitted to the Office of Mine Reclamation for review and approval. Revegetation with oaks and associated native plants can be designed to help fulfill both SMARA and CEQA requirements. Our botanists are here to assist you with your reclamation plans and to answer your oak-related questions. Additional resources are listed below:

California Oak Foundation: <http://www.californiaoaks.org>

Integrated Hardwood Range Management Program: <http://danr.ucop.edu/ihrmp>

Books (which can be ordered from the California Oak Foundation or IHRMP):

Regenerating Rangeland Oaks in California, 2001. Douglas D. McCreary. University of California Agriculture and Natural Resources Publication 21601.

The Oak Woodland Bird Conservation Plan: A Strategy for Protecting and Managing Oak Woodland Habitats and Associated Birds in California, Dr. Steven Zack.

A Planner's Guide for Oak Woodlands, 2nd edition, 2004. Giusti, McCreary, and Standiford (eds). IHRMP.

*Leah Gardner Miller
Reclamation Specialist*

Director of DOC Given Legal Standing

In a landmark decision, the California Supreme Court ruled on August 8, 2005, that the Director of the Department of Conservation has standing to bring a lawsuit against a lead agency for violations of the Surface Mining and Reclamation Act of 1975 (SMARA), related violations of the California Environmental Quality Act (CEQA), and determinations of vested rights. The unanimous decision in People ex rel. Department of Conservation v. El Dorado County et al. unambiguously establishes the Director's authority to challenge reclamation plans and financial assurances adopted by local lead agencies that the Director determines violate State-established SMARA standards.

This decision is the culmination of eight years of litigation between the Department of Conservation and El Dorado County over reclamation plans and financial assurances that the County approved for two surface mining operations operated by Loring Brunius: the Weber Creek Quarry and the Diamond Quarry. The Department filed two lawsuits in 1997 that challenged the reclamation plans and financial assurances for the two operations as well as CEQA documentation and vested rights determinations. Both lawsuits were later consolidated. The trial court, after once ruling that the Director had standing to bring the cases, reversed course and ruled that the Director did not have standing, and awarded the County, and the mining associations supporting the County, a total of more than \$500,000 in attorneys' fees. The Court of Appeal, in a 2-1 decision, agreed with the Trial Court on the question of the Director's standing but reversed the award of attorneys' fees.

To conclude that the Director has standing to bring a lawsuit, a writ of mandate action, the Supreme Court had to determine that the Director has a "beneficial interest" in lead agencies' approving adequate reclamation plans and financial assurances. After an exhaustive discussion of SMARA, including its legislative history, the underlying policies and practical effect of the lower courts' rulings, the Supreme Court concluded that the Director does, indeed, have such a beneficial interest. The Court concluded that the Director has broad enforcement powers and responsibilities directed toward overall SMARA compliance and the fulfillment of state reclamation policy generally. The Court also concluded that the Director has a substantial interest in the adequacy of financial assurances submitted under SMARA so the taxpaying public will not have to bear the burden of paying for the reclamation of mine sites.

The Supreme Court further opined that its decision acknowledging the Director's beneficial interest in obtaining a writ of mandate does not diminish the State Mining and Geology Board's authority as conferred by SMARA. The Court discussed the Board's various authorities but recognized that the Board's takeover authority includes no power retroactively to alter a reclamation plan that has been approved by a local lead agency under a certified ordinance.

Instead, the Court identified the consequence that might flow from construing SMARA as not allowing the Director to file a writ: that a County's approval of allegedly inadequate reclamation plans and financial assurances could remain in place even after the Board exercises its takeover authority and that such lead agency approvals could become final despite their noncompliance with SMARA standards.

In conclusion, the Court summed up its decision by stating that the "Director's standing to pursue a writ of mandate is essential to protect his - and the public's - interest in adequate reclamation, paid for by the operator".

It is important to note that this decision did not address the merits of the underlying dispute, the alleged violations of SMARA and CEQA and the vested rights determination that the Director sought to challenge in 1997 when the lawsuits seeking to vacate the County's approvals were filed. The Supreme Court sent this matter back to the Trial Court for further proceedings consistent with its decision.

*Marcia Steinberg
Legal Office*

New Director of DOC Named

Governor Arnold Schwarzenegger appointed Bridgett Luther Thompson as Director of the Department of Conservation (DOC) effective September 1, 2005. "Bridgett shares my dedication to protecting our environment and ensuring our natural resources are wisely conserved," the Governor said.

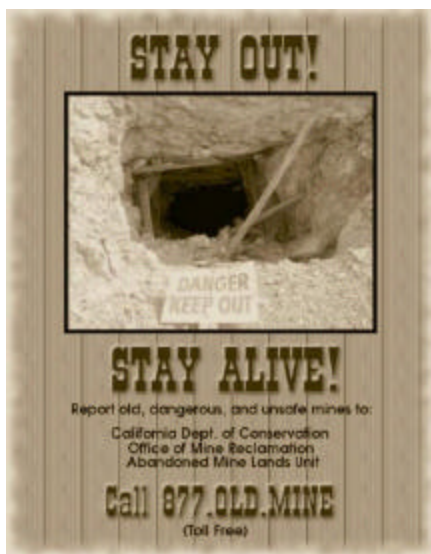


Director Thompson with Resources
Agency Secretary Mike Chrisman

Thompson most recently served as the regional development director for Hands On Bay Area. In this capacity, she managed fundraising and developed partnerships with a variety of public and private entities in the five-county Bay Area region for this volunteer management non-profit organization. Thompson previously was national development director for Republicans for Environmental Protection from 2003 to 2004 and program director for the Trust for Public Land in Charlotte, North Carolina, from 1999 to 2003.

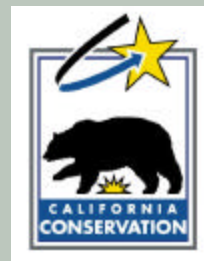
"I am honored Governor Schwarzenegger has asked me to work with him to protect California's diverse and precious natural resources," said Thompson, 50, a resident of San Francisco. "I am committed to balancing California's needs today with our obligations tomorrow by ensuring the sensible use and conservation of energy, land, and mineral resources."

"The Office of Mine Reclamation staff has a full plate, and I look forward to doing what I can to help them," Thompson said.



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The purpose of this publication is to impart the latest reclamation tips as well as changes in SMARA-related legislation or the interpretation of existing statutes by court decisions.

<i>Director:</i>	<i>Bridgett Luther Thompson</i>
<i>Assistant Director for OMR:</i>	<i>Douglas W. Craig</i>
<i>Newsletter Editor:</i>	<i>Lynne Taylor</i>



Legislation Update

SB 1110— The Department pursued some administrative changes to improve SMARA that were included in this omnibus bill: (1) clarify that fees collected from gold and silver production could be used to remediate pre-SMARA mines; (2) repeal a reporting requirement related to abandoned mines; (3) define “local agency” as it relates to the AB#3098 List; and (4) prohibit mining operations from selling materials to a contractor unless the operator is in compliance with SMARA. **STATUS**—This bill was approved by the Governor as Chapter 383, Statutes of 2005.

--Information current as of publication date

SMARA Workshops are COMING SOON!

The Office of Mine Reclamation plans to host a series of SMARA workshops beginning in early 2006. The next issue of the *SMARA Update* will provide more information on these upcoming workshops.

Please take the SMARA Update Reader Survey at:

<http://www.consrv.ca.gov/OMR/smara/newsletter/survey.htm>

OMR - Ensuring mined lands are returned to a beneficial end use after mining.